

TPCResCor update

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Overview: More questions than answers

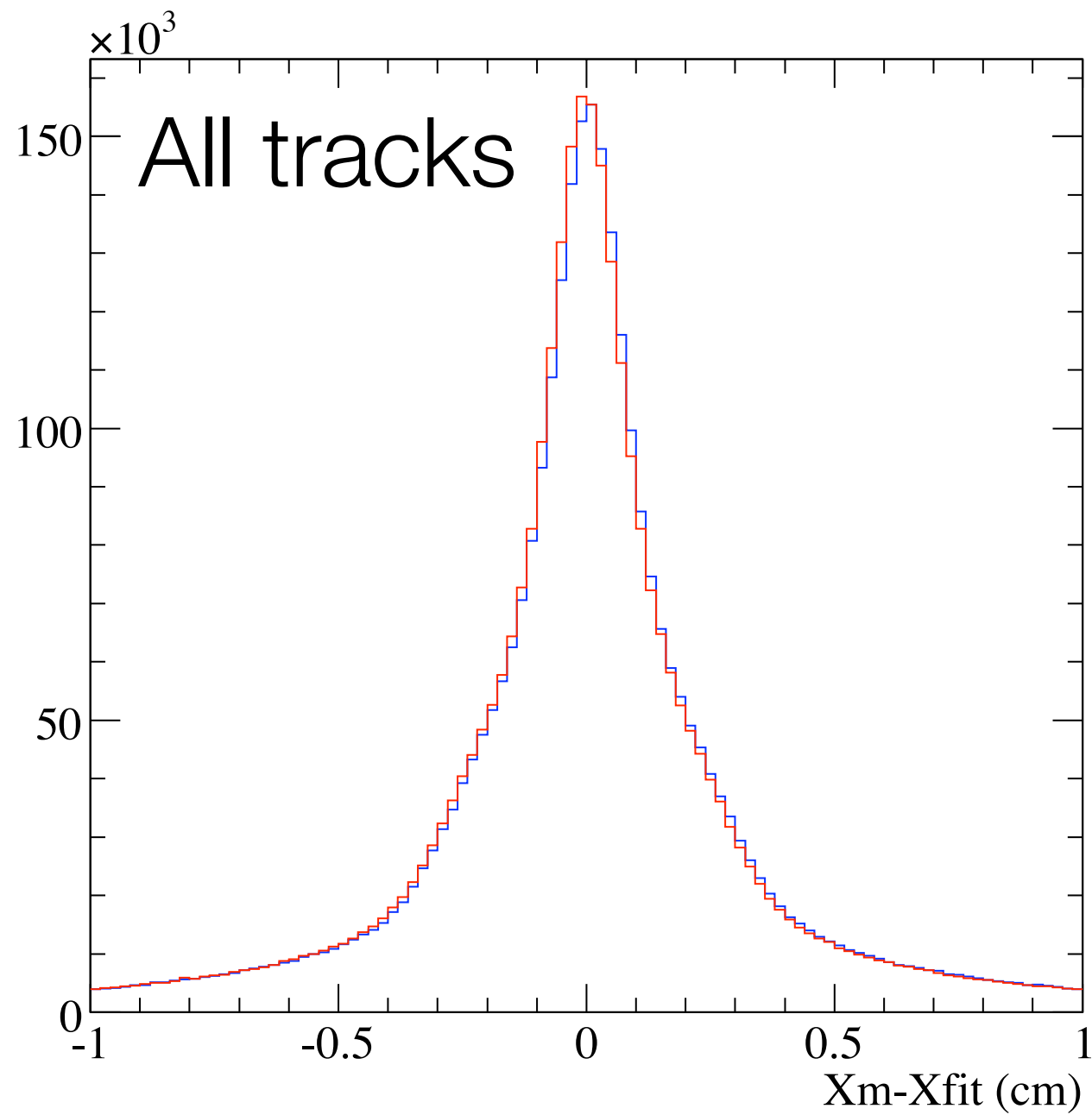
Updates since 2 weeks ago

- I have completed generating a map using several target out runs from the 15000's
- I have used that map to reconstruct interactions from run 15860 (120 GeV, 2% carbon target) with and without the rescoring corrections applied

Observations and questions

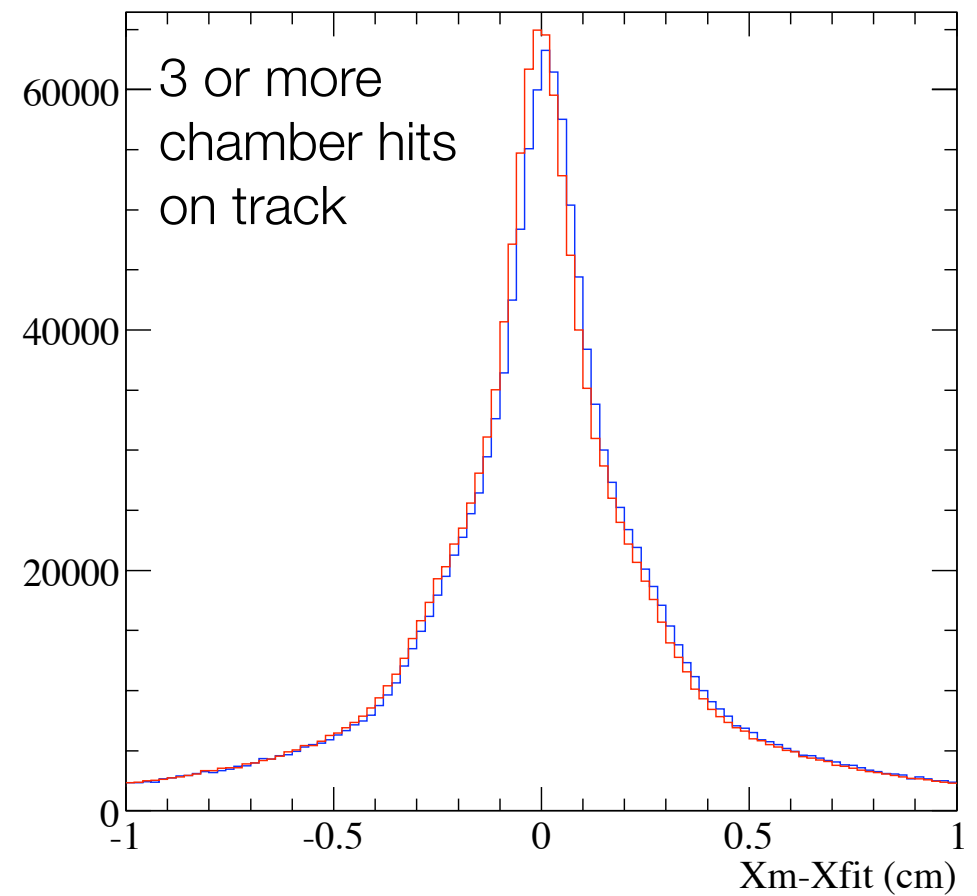
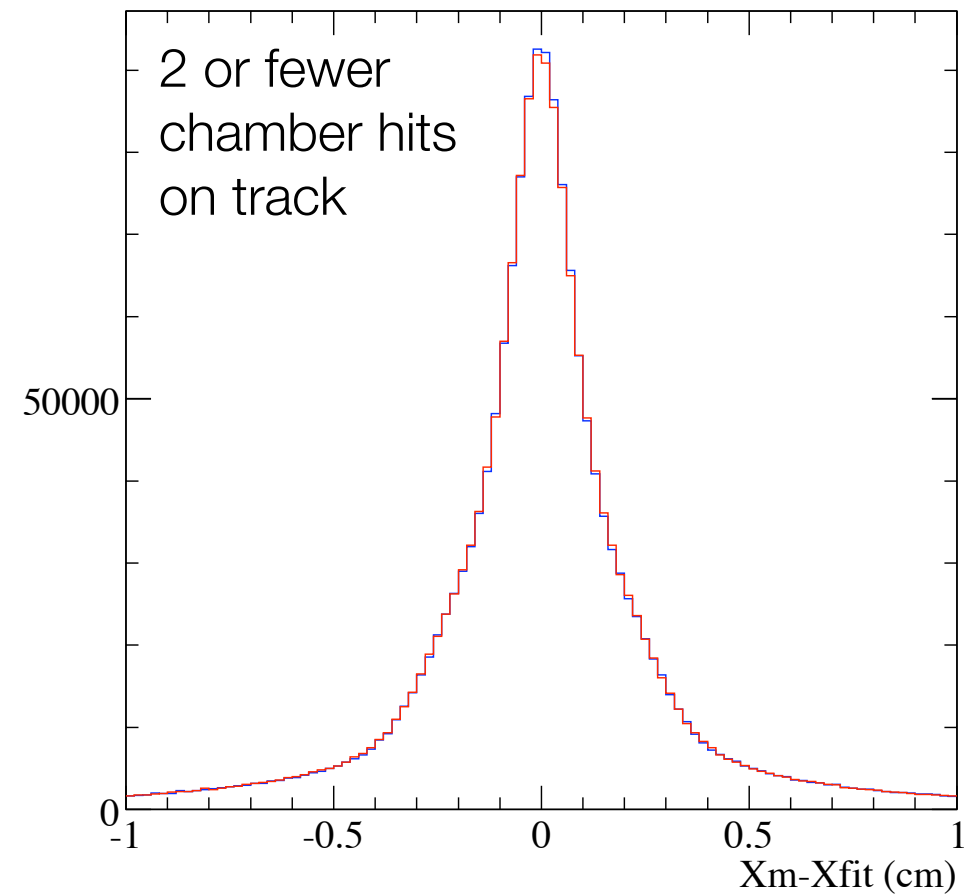
- The TPC residuals from run 15860 look pretty good (no systematic effects >1 mm) without rescoring. This is not what I saw with the target-constrained fits used to generate the rescoring maps.
- Applying the rescoring map
 1. Almost no change to the x residuals
 2. Slight changes to the y residuals
 3. Reconstructed target position moves downstream, little (no?) improvement in resolution

x residuals in TPC



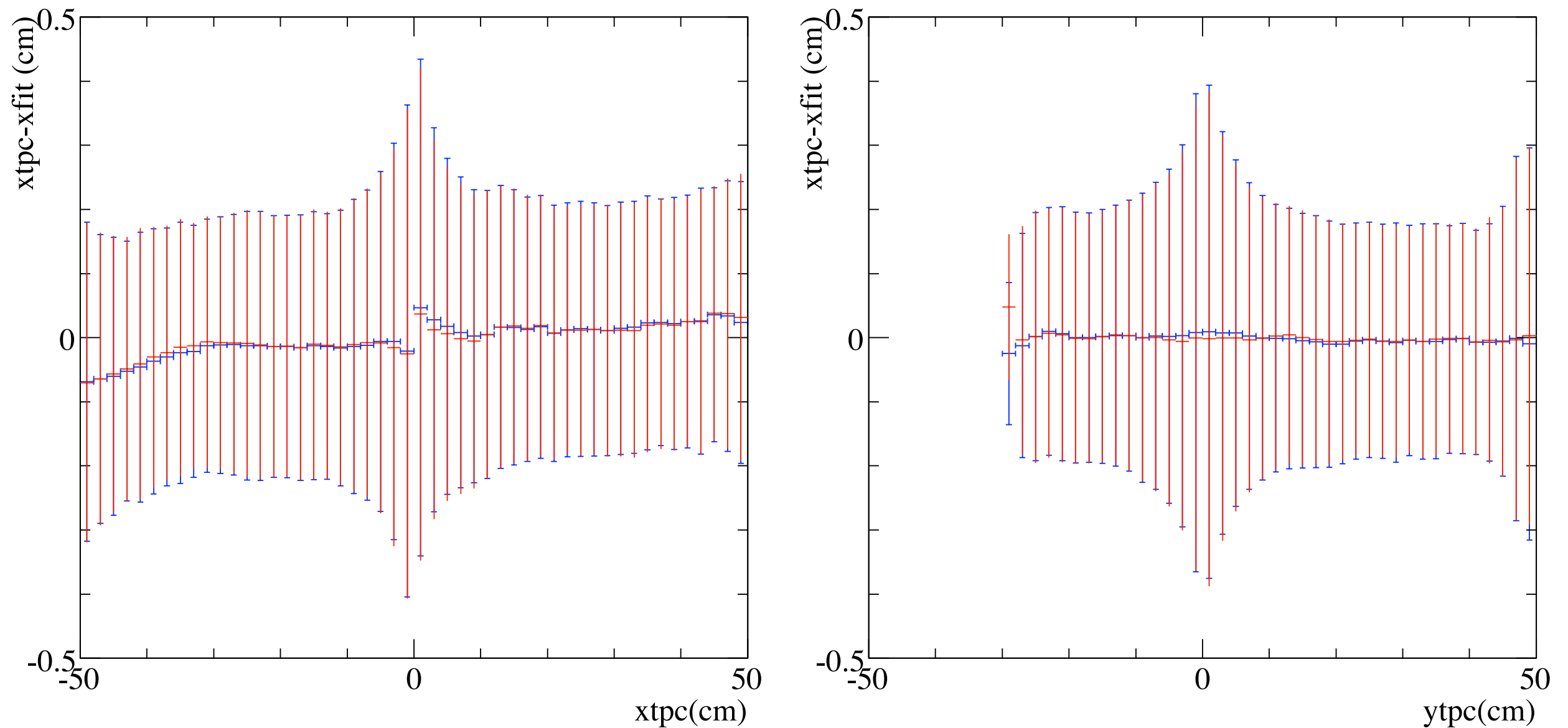
Blue: rescor off

Red: rescor on



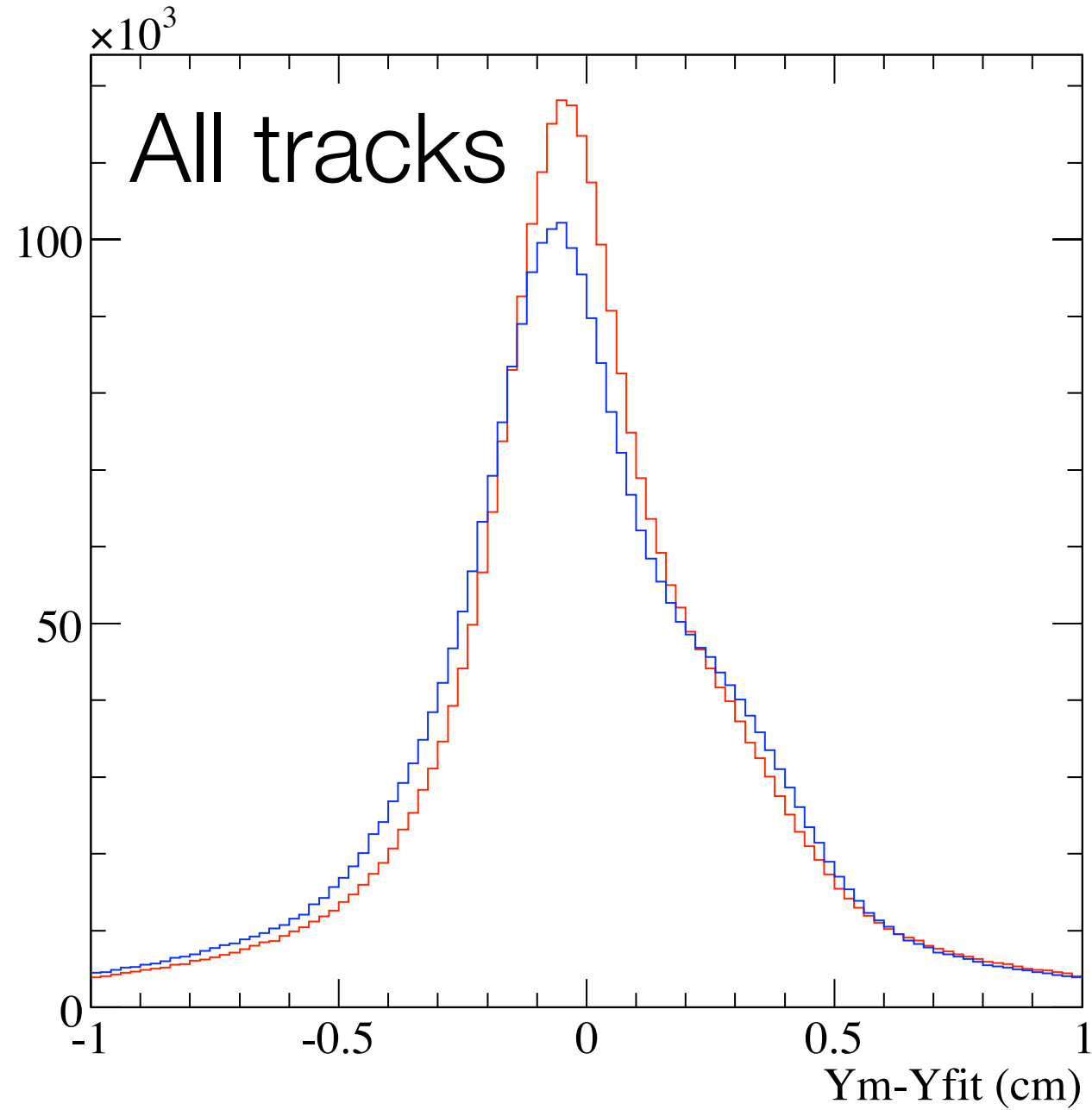
TPC x residuals vs. x and y

Profile histograms plotted with mean and spread



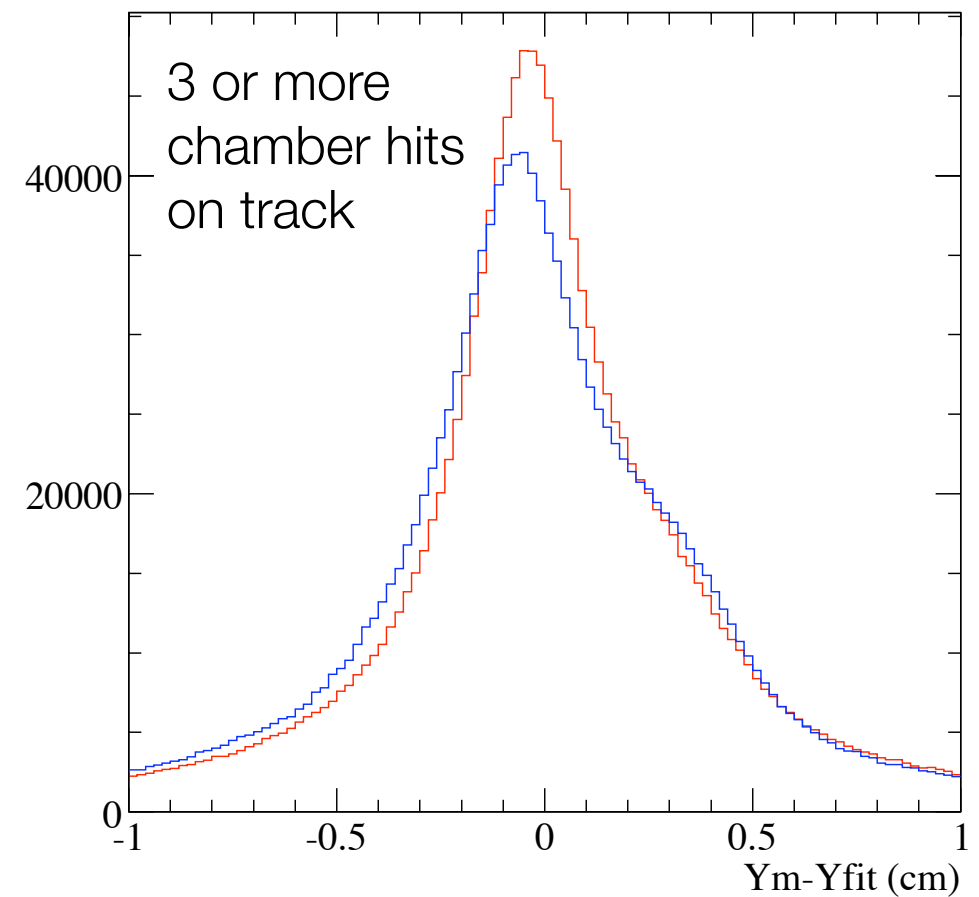
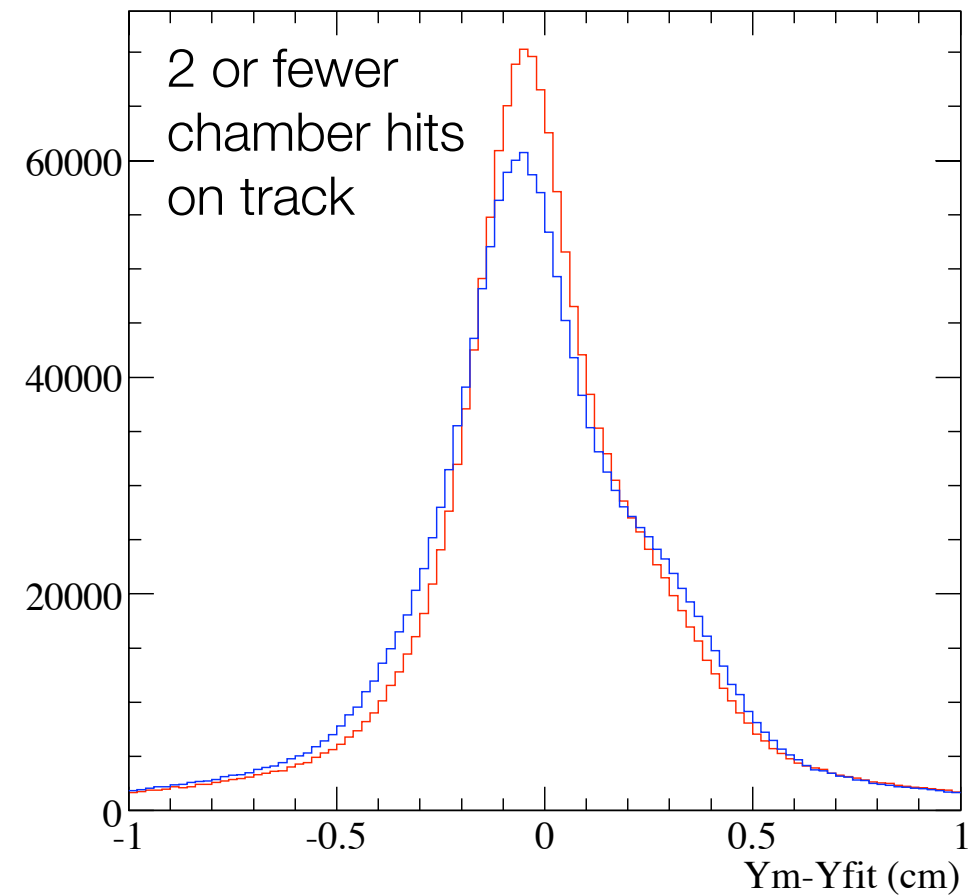
y residuals in TPC

ResCor gives a slight improvement in y residuals



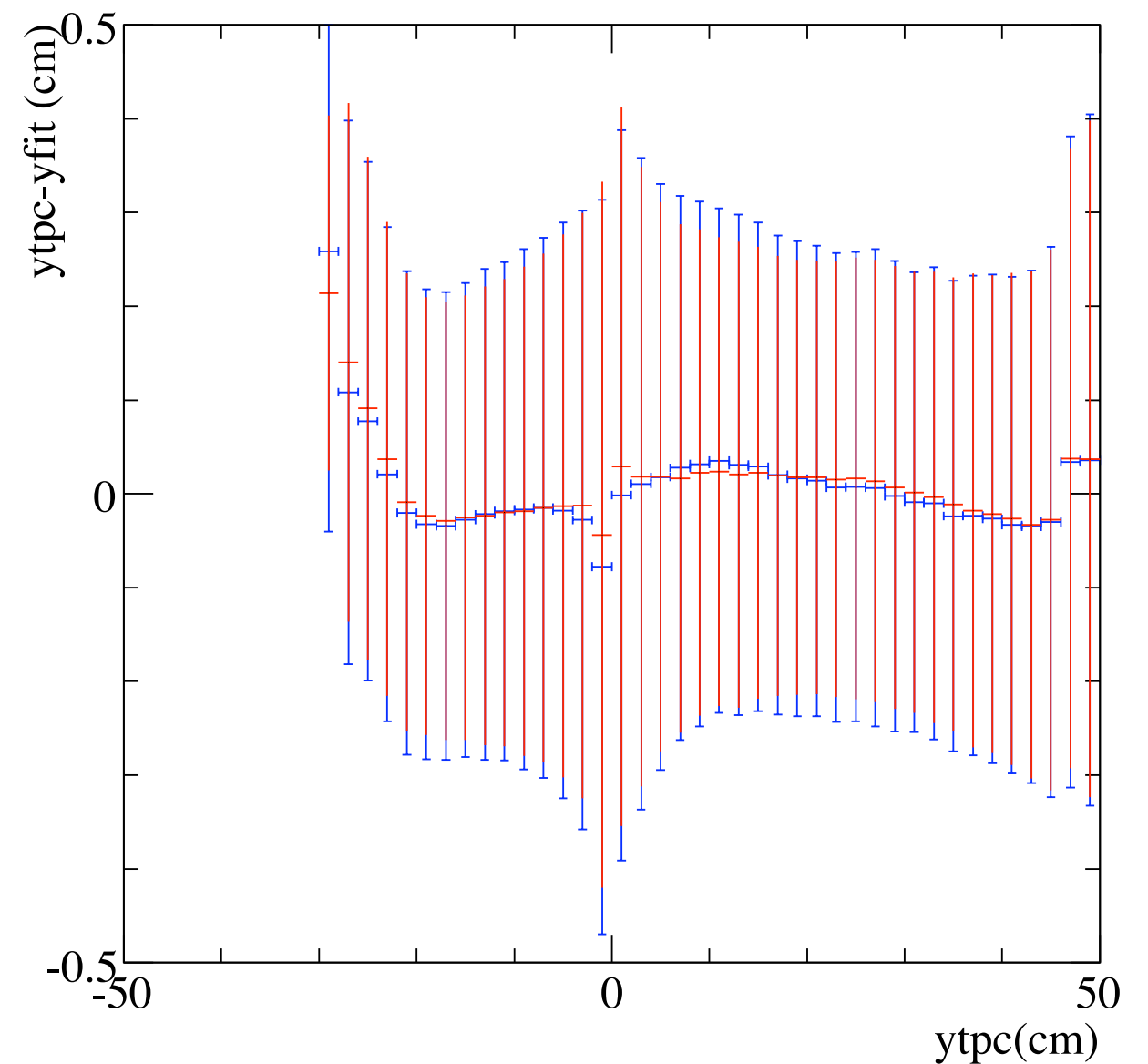
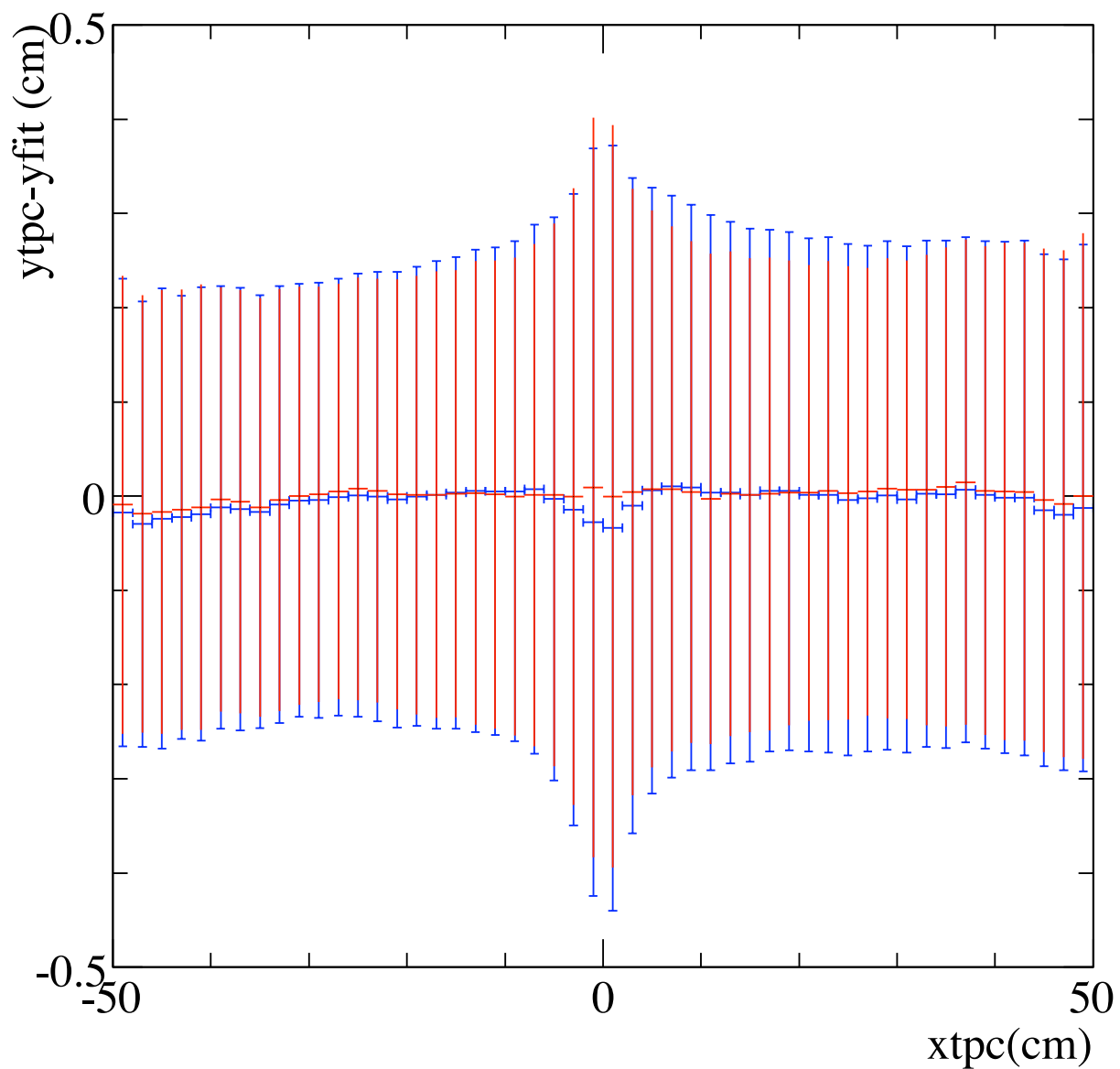
Blue: rescor off

Red: rescor on



TPC y residuals vs. x and y

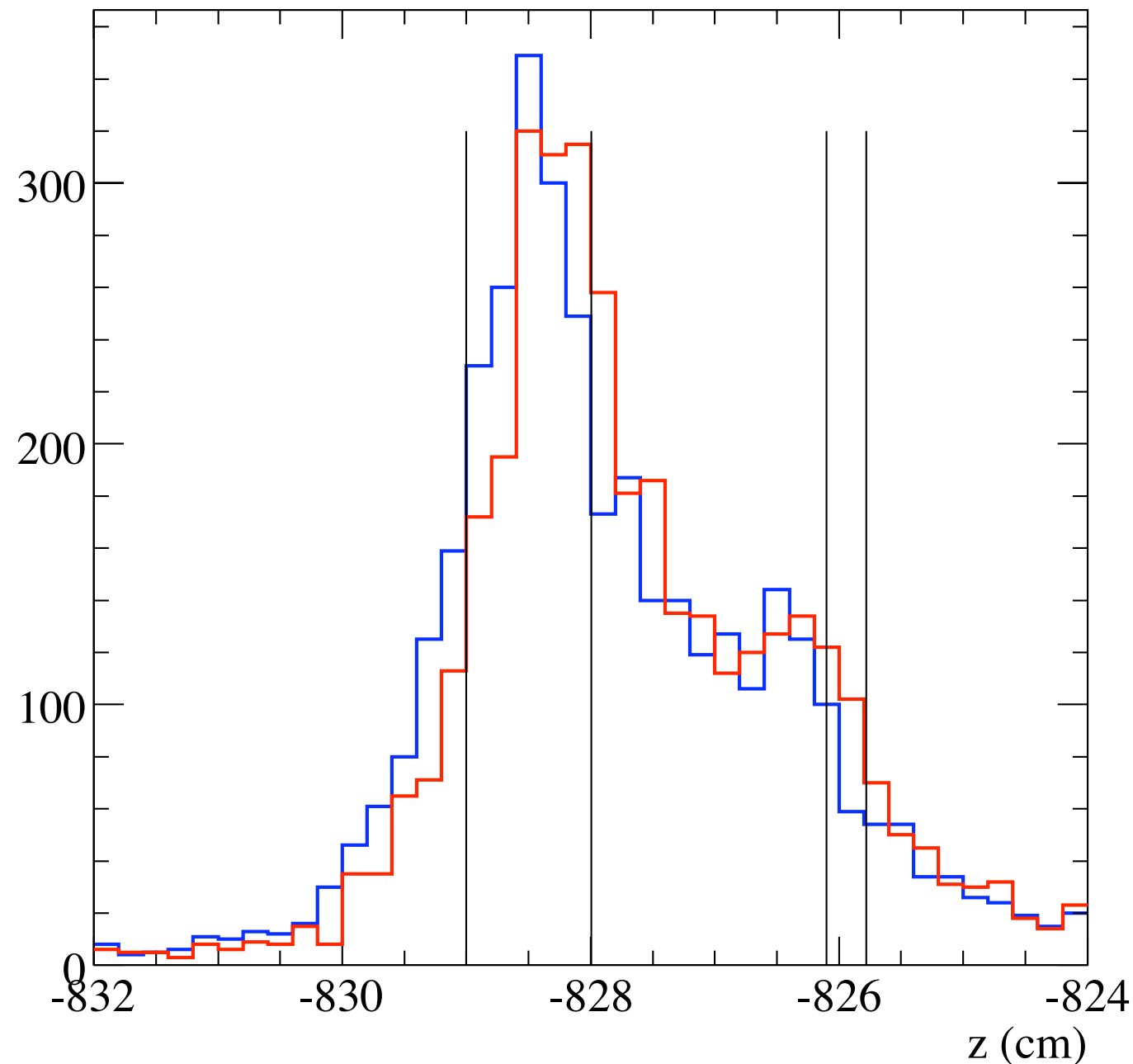
Profile histograms plotted with mean and spread



Blue: rescor off

Red: rescor on

Vertex z distribution



Blue: rescor off
Red: rescor on

- Selected vertices with three or more tracks
- Black lines indicate target and trigger counter edges
- Rescor off: Target position looks good, scint position looks off
- Rescor on: both peaks walk downstream
- No improvement in resolution

Summary

- ResCor seems to have little affect on the data sample that was not used to build the map. May be effect of small statistics in wings. Could be tested by using more data to generate the maps. This will need the batch farms.
- Without target constraint, track fit residuals show few systematic biases
- Without rescoring target position comes out correct, but scint position is too far upstream. Applying rescoring (which was tuned to the scint position) pulls the fits downstream. Do we have the scint location correct??